

Geochemical Report

on the

SOUTH PROPERTY

Situated in the Clinton Mining Division, B.C.  
at coordinates: 51 deg. 53 min. N, 120 deg. 56 min. W

by: Lorne M. Warner

NORANDA EXPLORATION COMPANY, LIMITED  
(NO PERSONAL LIABILITY)

FILMED

February, 1986

N.T.S. 92P/15W

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**14,798**

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**SUMMARY:**

The South Property is located approximately 40 km northeast of 100 Mile House in South central British Columbia. The property is situated within the Quesnel Trough greenstone belt. The belt is interpreted as an island arc environment created in the Triassic to Jurassic period.

Interest in the South Property resulted from coincident I.P. and gold soil anomalies which trended towards the South Property from the Hawkins Lake Showing.

In March, 1985, Noranda Exploration Company, Limited optioned the South Property and to date has completed a soil sampling survey. Results from the survey were not encouraging.

**INTRODUCTION:**

The South claim was first staked on February 23, 1979 by Teck Corporation and was placed into the ownership of Alfred Robinson in October 1979. On January 10, 1980, Torhsen Energy Corporation received ownership of the South claim from Alfred Robinson which Torhsen Energy Corporation then optioned to Noranda Exploration Company, Limited, on March 6, 1985.

In February 1986 Noranda carried out a soil geochemistry survey. This report describes the results of that survey.

**LOCATION AND ACCESS:**

The property is located approximately 40 km northeast of 100 Mile House, in South central British Columbia (Figure 1). The property is also approximately 4.5 km at a bearing of 285 deg. (true) from the village of Eagle Creek, located just north of Canim Lake.

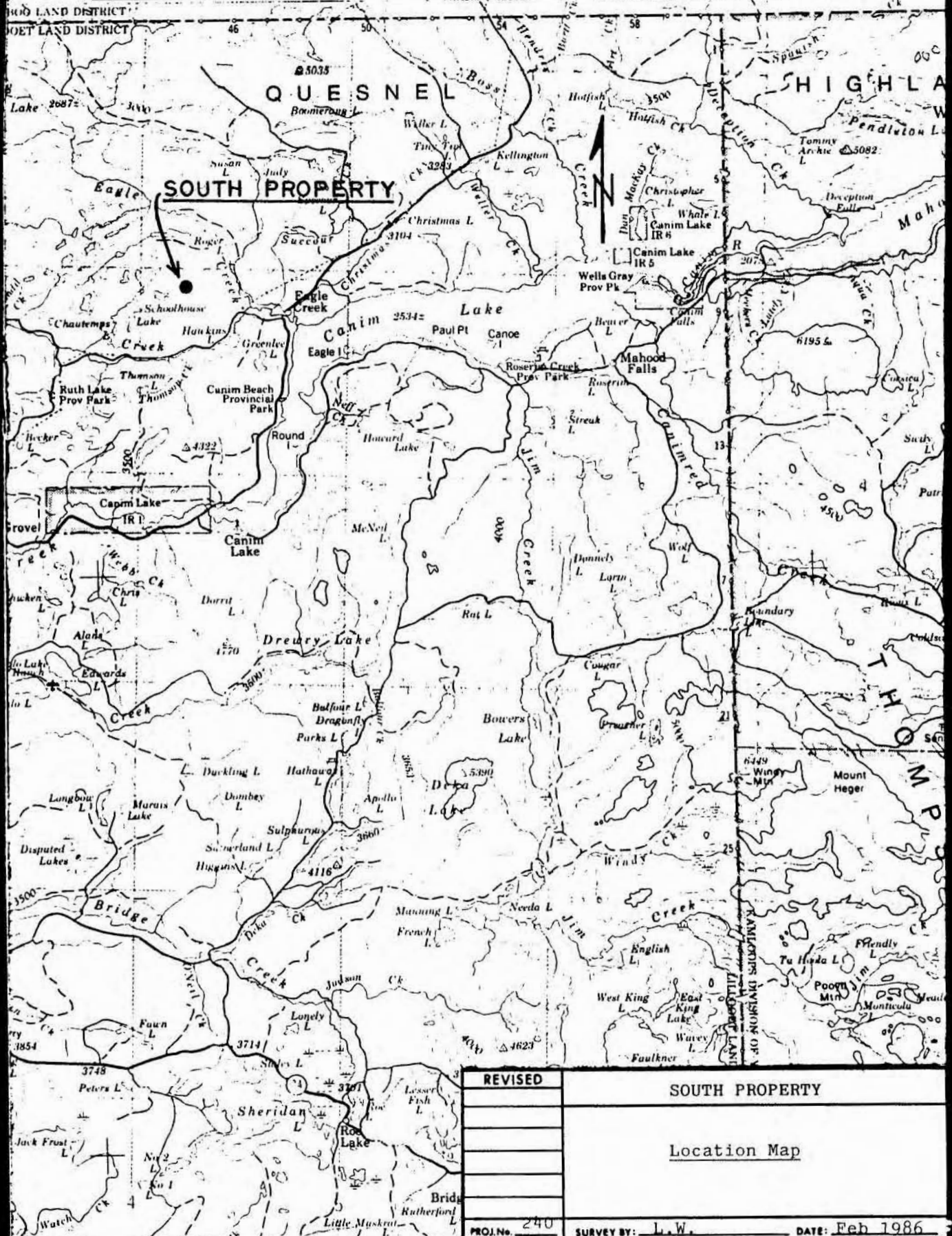
Access to the property from 100 Mile House is via the all-weather mine haulage road from Noranda's Boss Mountain Mine. At Eagle Creek, a good gravel road leads to the north shore of Hawkins Lake; from Hawkins Lake, a rough 4X4 truck road leads onto the property.

**CLAIM STATISTICS:**

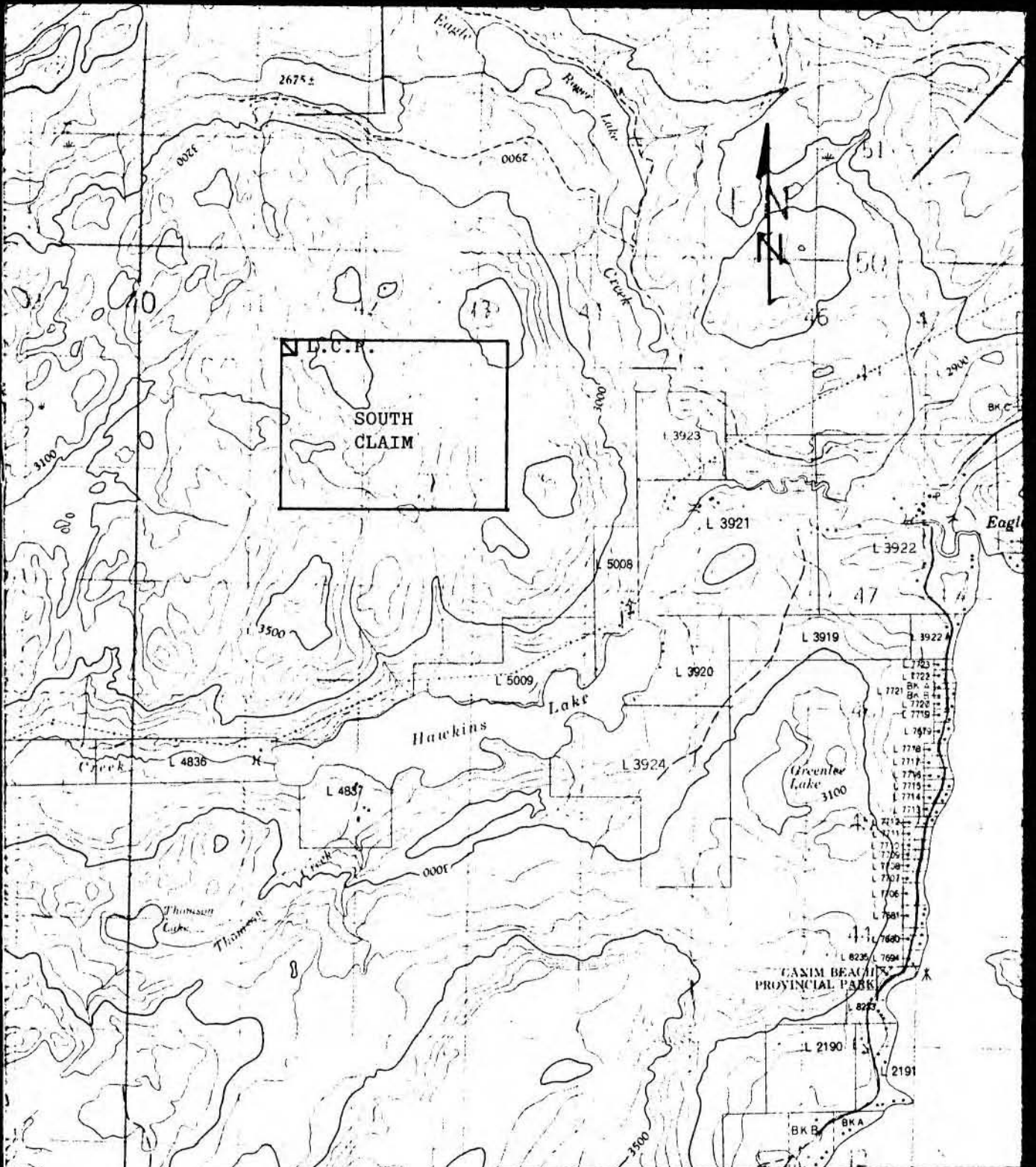
The South property consists of one mineral claim, located in the Clinton Mining District (Figure 2).

<u>Claim Name</u>	<u># Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
SOUTH	12	287	Feb. 23, 1987

The claim is owned by Torhsen Energy Corporation, but is presently under option to Noranda Exploration Company, Limited.



REVISED	SOUTH PROPERTY	
	Location Map	
PROJ. No. 240	SURVEY BY: L.W.	DATE: Feb 1986
N.T.S. 92P	DRAWN BY:	SCALE: 1:250,000
DWG. No. 1	<b>NORANDA EXPLORATION</b>	
	OFFICE: Prince George, B.C.	



D.C.F.  
SOUTH CLAIM

REVISED	SOUTH CLAIM	
	Location Map	
PROJ.No. 240	SURVEY BY: L.W. & R.G.	DATE: Feb 1986
N.T.S. 92P/15	DRAWN BY:	SCALE: 1:50,000
DWG.No. 2	<b>NORANDA EXPLORATION</b>	
	OFFICE: Prince George, B.C.	



### PREVIOUS WORK:

Alfred and Clay Robinson's Copper-Gold discovery on the Hawkins Lake property resulted in the staking of the South claim. Noranda personnel, while conducting a survey of the Hawkins Lake property in 1984 extended their work onto the South claim. Work which was completed at this time can be found in Thomas D. Lewis's and Lyndon Bradish's "Hawkins Lake-Alclare Resources option" Report January 1985.

### REGIONAL GEOLOGY:

Geological mapping by Campbell and Tipper (Memoir 363, 1971) of the Geological Survey of Canada, is the most recent mapping in the area. They conclude the region is underlain by Nicola volcanic and Sedimentary rocks of Triassic-Jurassic age. These rocks consist mainly of greenstones, and greenstone tuffs, breccias and limestone. Intruding the Volcanic Sequence, is the Takomkane batholith of Cretaceous age.

### GRIDWORK:

Noranda crews established a baseline at an azimuth of 020 degrees (true) with 3 1/2 crosslines running at 100 meter intervals along it (Figure 3). These lines run perpendicular from the baseline for a distance of 500 meters, each way. A total of 3.5 km of crossline exist on the South claim. The crosslines have orange and blue stations at 25 meter intervals with the line in orange.

### GEOCHEMISTRY:

#### (i) Introduction

Soil Sampling was performed along each crossline at 50 meter intervals. A total of 74 soil samples and 6 rock samples were taken and analysed for copper, gold and arsenic. The results are plotted on a 1:5,000 scale base map (Figure 3, in pocket).

#### (ii) Method

Due to the variable layer of volcanic ash below the A horizon standard soil sampling techniques were not used. All samples were taken by using a hand auger which obtained soils at each site from a depth between 0.5 and 1.0 meter. The samples were placed in "Hi" Wet Strength Kraft envelopes, and marked with grid coordinates using indelible ink. The determination procedure for copper, gold and arsenic is described in Appendix III. Furthermore, operation of a Varian Techtrol Model AA-5 Atomic Absorption Spectrophotometer is fully outlined in the literature and will not be described in this report.

(iii) Observations:

COPPER The copper values range from 8 to 280 ppm in the soils. The anomalies occur as isolated highs, therefore, showing no trend.

ARSENIC The Arsenic values range from 1 to 6 ppm in the soils and are not considered anomalous.

GOLD The gold values range from 10 to 790 ppb in the soils with only two values greater than 10 ppb. These anomalies occur as isolated highs, therefore, showing no trend.

Six rock samples were also taken and analyzed for copper, arsenic and gold. The highest copper values from all of these rocks is 84 ppm. The highest arsenic and gold values from all of these rocks is 4 ppm and 10 ppb respectively.

CONCLUSIONS:

Favourable geological and geophysical targets found on the Hawkins property, which is to the north of the South claim, were hoped to extend onto the South claim. Soil geochemistry correlated well with favourable geological and geophysical targets on the Hawkins Lake property and should have worked well on the South property. Therefore, due to the very limited geochemical response in the soil samples, favourable targets were not outlined on the South property.

REFERENCES:

- Baerg, Robert J. Geological, Geochemical and Drilling Report on the Hawkins Lake-Alclare Resources Option, May 1985.
- Lewis, T.D., & Bradish, L. Geological, Geochemical and Geophysical Report on the Hawkins Lake-Alclare Resources Option, 1985.
- Tipper, H.W., & Campbell, R.B. Geology of the Bonaparte Map Area, British Columbia; Memoir B63, 1971.

APPENDIX I

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COSTS

DATE: FEBRUARY, 1986

Project: SOUTH PROPERTY

Type of Report: GEOCHEMICAL

(a) WAGES:

Soil Geochem - 4 mandays at \$115.00/day \$ 460.00

(b) FOOD, ACCOMMODATION & SUPPLIES: \$ 105.00

(c) TRANSPORTATION: \$ 100.00

(d) ANALYSIS:

80 samples @ \$11.50/sample \$ 920.00

(e) COST AND PREPARATION OF REPORT:

Author	\$ 150.00
Drafting	\$ 115.00
Typing	\$ 50.00
	-----
	\$ 315.00

TOTAL: \$ 1900.00

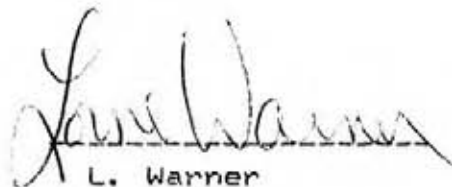


APPENDIX II

STATEMENT OF QUALIFICATIONS

I, Lorne Warner of Prince George, Province of British Columbia, do hereby certify that:

1. I am a Geologist residing at R.R. #3, Site 6, Comp. B, Chief Lake Road, Prince George, British Columbia.
2. I am a graduate of the University of Alberta with a B.Sc. (geology).
3. I presently hold the position of geologist with Noranda Exploration Company, Limited and have been in their employ since May, 1985.

  
L. Warner

### APPENDIX III

#### ANALYTICAL METHOD DESCRIPTIONS FOR GEOCHEMICAL ASSESSMENT REPORTS

The methods listed are presently applied to analyse geological materials by the Noranda Geochemical Laboratory at Vancouver.

##### Preparation of Samples

Sediments and soils are dried at approximately 80°C and sieved with a 80 mesh nylon screen. The -80 mesh (0.18 mm) fraction is used for geochemical analysis.

Rock specimens are pulverized to -120 mesh (0.13 mm). Heavy mineral fractions (panned samples \* from constant volume), are analysed in its entirety, when it is to be determined for gold without further sample preparation.

##### Analysis of Samples

Decomposition of a 0.200 g sample is done with concentrated perchloric and nitric acid (3:1), digested for 5 hours at reflux temperature. Pulps of rock or core are weighed out at 0.4 g and chemical quantities are doubled relative to the above noted method for digestion.

The concentrations of Ag, Cd, Co, Cu, Fe, Mn, Mo, Ni, Pb, V and Zn can be determined directly from the digest (dissolution) with a conventional atomic absorption spectrometric procedure. A Varian-Techtron, Model AA-5 or Model AA-475 is used to measure elemental concentrations.

##### Elements Requiring Specific Decomposition Method:

**Antimony - Sb:** 0.2 g sample is attacked with 3.3 ml of 6% tartaric acid, 1.5 ml conc. hydrochloric acid and 0.5 ml of conc. nitric acid, then heated in a water bath for 3 hours at 95°C. Sb is determined directly from the dissolution with an AA-475 equipped with electrodeless discharge lamp (EDL).

**Arsenic - As:** 0.2 - 0.3 g sample is digested with 1.5 ml of perchloric 70% and 0.5 ml of conc. nitric acid. A Varian AA-475 equipped with an As-EDL is used to measure arsenic content in the digest.

**Barium - Ba:** 0.1 g sample digested overnight with conc. perchloric, nitric and hydrofluoric acid; Potassium chloride added to prevent ionization. Atomic absorption using a nitrous oxide-acetylene flame determines Ba from the aqueous solution.

**Bismuth - Bi:** 0.2 g - 0.3 g is digested with 2.0 ml of perchloric 70% and 1.0 ml of conc. nitric acid. Bismuth is determined directly from the digest with an AA-475 complete with EDL.

**Gold - Au:** 10.0 g sample is digested with aqua regia (1 part nitric and 3 parts hydrochloric acid). Gold is extracted with MIBK from the aqueous solution. AA is used to determine Au.

**Magnesium - Mg:** 0.05 - 0.10 g sample is digested with 4 ml perchloric/nitric acid (3:1). An aliquot is taken to reduce the concentration to within the

range of atomic absorption. The AA-475 with the use of a nitrous oxide flame determines Mg from the aqueous solution.

**Tungsten - W:** 1.0 g sample sintered with a carbonate flux and thereafter leached with water. The leachate is treated with potassium thiocyanate. The yellow tungsten thiocyanate is extracted into tri-n-butyl phosphate. This permits colourimetric comparison with standards to measure tungsten concentration.

**Uranium - U:** An aliquot from a perchloric-nitric decomposition, usually from the multi-element digestion, is buffered. The aqueous solution is exposed to laser light, and the luminescence of the uranyl ion is quantitatively measured on the UA-3 (Scintrex).

\* N.B. If additional elemental determinations are required on panned samples, state this at the time of sample submission. Requests after gold determinations would be futile.

#### LOWEST VALUES REPORTED IN PPM

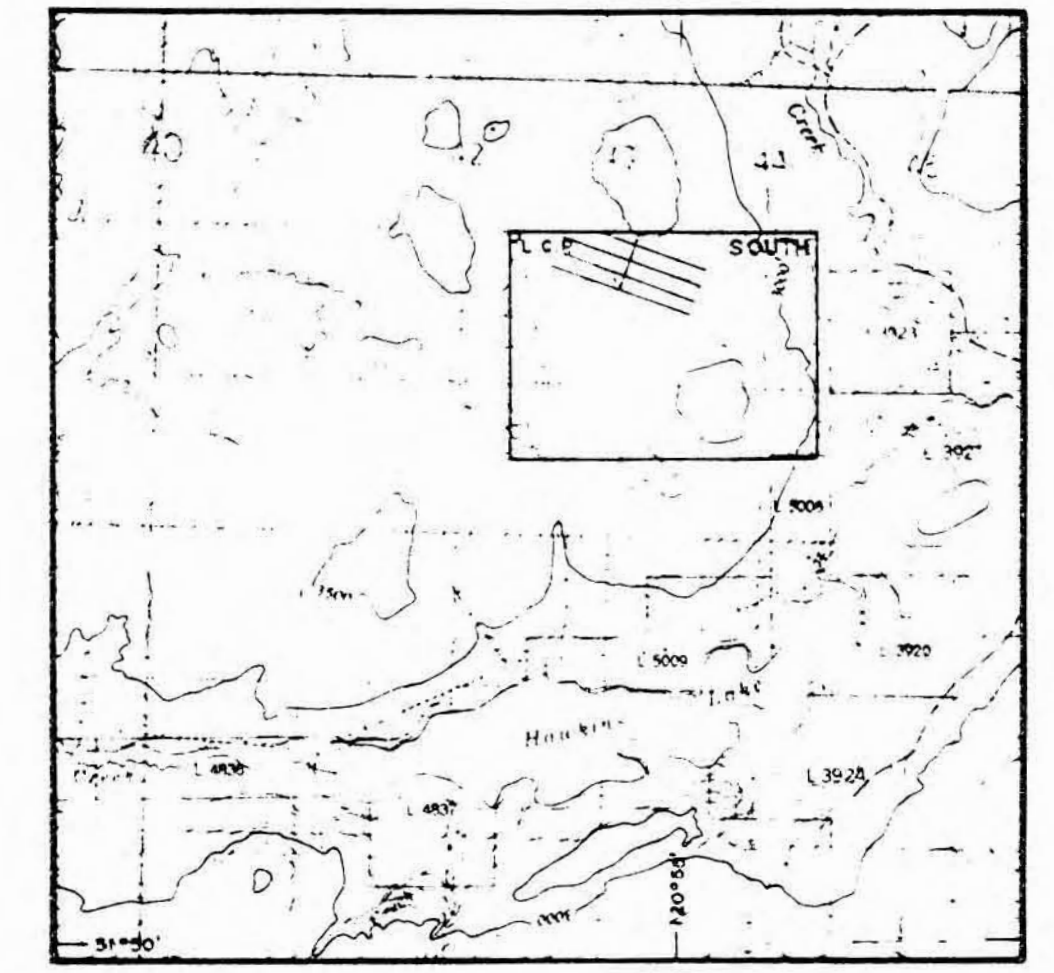
Ag - 0.2	Mn - 20	Zn - 1	Au - 0.01
Cd - 0.2	Mo - 1	Sb - 1	W - 2
Co - 1	Ni - 1	As - 1	U - 0.1
Cu - 1	Pb - 1	Ba - 10	
Fe - 100	V - 10	Bi - 1	

EJvL/ie  
March 14, 1984





LOCATION MAP



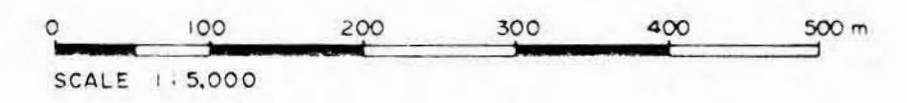
SOIL GEOCHEMICAL BRANCH  
ASSESSMENT REPORT

**14,798**  
LEGEND

24/1/10 SOIL GEOCHEM RESULTS Cu(ppm); As(ppm); Au(ppb)  
3 x ROCK SAMPLE

ROCK SAMPLE ANALYSIS				
SAMPLE #	TYPE	Cu (ppm)	As (ppm)	Au (ppb)
2	rock	8	4	10
3	"	24	1	10
4	"	48	1	10
5	"	12	1	10
6	"	16	1	10
7	"	84	1	10

*Lorne Wann*



REVISED	SOUTH OPTION	
	SOIL GEOCHEM SURVEY Cu(ppm); As(ppm); Au(ppb)	
PROJ. No	SURVEY BY L W , B G	DATE FEB , 1986
NTS 92P/15	DRAWN BY S K B	SCALE 1:5000
DWG No	<b>NORANDA EXPLORATION</b>	
FIG. 3	OFFICE PRINCE GEORGE, B.C.	